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## Letter dated 11 February 1998 from the Permanent Representative of Zimbabwe to the United Nations addressed to the Secretary-General

I have the honour to forward herewith the report of the Expert Group Meeting on Strategic Approaches to Freshwater Management,* held at Harare, Zimbabwe, from 27 to 30 January 1998, for the use as a document of the Commission on Sustainable Development and its Inter-sessional Ad Hoc Working Group on Strategic Approaches to Freshwater Management.

I should be grateful if you would have the text of the present letter and its annex distributed as a document of the sixth session of the Commission on Sustainable Development and also made available to the inter-sessional Ad Hoc Working Group on Strategic Approaches to Freshwater Management.

(*Signed*) Machivenyika T. **Mapuranga**
Ambassador and Permanent Representative

* Circulated in the language of submission only.

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Annex

# REPORT OF THE EXPERT GROUP MEETING ON STRATEGIC APPROACHES TO FRESHWATER MANAGEMENT (Harare, Zimbabwe, 27-30 January 1998)

## I. INTRODUCTION

1. The Expert Group Meeting was hosted by the Government of Zimbabwe and organised by the United Nations Department of Economic and Social Affairs. The main objective of the Meeting was to provide an expert contribution to the forthcoming deliberations on «Strategic Approaches for Freshwater Management» that will take place in the Ad hoc Working Group of the UN Commission on Sustainable Development (New York, 23-29 February, 1998) and, later, during the sixth Session of the CSD (New York, 20 April – 1 May, 1998).

2. The Meeting was Co-Chaired by Mr. Robert Ainscow of the United Kingdom and Mr. Sibekile Mtetwa of Zimbabwe. At the opening of the Meeting, the Honorable Mrs. Joyce Mujuru, Minister of Rural Resources and Water Development of Zimbabwe, delivered a statement of behalf of the Host Country. The Meeting was attended by more than 170 experts from developed and developing countries and countries with economies in transition, international organisations from both within and outside of the United Nations, and from the non-governmental organisations and major groups of the civil society.

3. In addition to the Plenary meetings, four Working Groups were established in order to ensure an in-depth consideration of a number of specific themes on the agenda, namely «I. Water as the Key Resource in Sustainable Development», «II. Freshwater Ecosystems and Water Quality», «III. Economic and Financial Issues», and «IV. Participation and Institutions for Integrated Water Resources Management». The deliberations in each of the Working Groups were led by two Moderators as follows: Working Group I - Mr. James Bruce (Canada) and Ms. Krishna Singh (India); Working Group II – Mr. Ingvar Andersson (Sweden) and Mr. Armando Bertranou (Argentina); Working Group III – Mr. Torkil Jonch-Clausen (Denmark) and Mr. Sékou Touré (Côte d'Ivoire); and Working Group IV – Mr. Mohammed Jellali (Morocco) and Mr. Jean Claude Vial (France).

4. The participants noted a number of recent or forthcoming regional and international activities related to freshwater, in particular the adoption of the Cape Town Declaration of December 1997 and the preparations for the Ministerial meeting on Water Resources and Sustainable Development to take place in Paris in March 1998.

5. The participants expressed their appreciation to the Government and people of Zimbabwe for hosting the meeting and the hospitality extended to its participants. They also expressed their gratitude to the sponsors of the meeting – the Governments of Denmark, France, Ireland, the Netherlands, Sweden and the United Kingdom, and to the European Commission.

6. The report of the Meeting is presented as the co-chairmen's summary prepared in collaboration with the moderators. It attempts to assess - in broad terms - the overall outcome of the Meeting and to draw a number of key conclusions from the discussions held. The co-chairmen's summary is accompanied by the reports of the four Working Groups (Annex I - IV). Thy outline in much greater detail the main recommendations and proposals made by the participating experts regarding actions required – at the local, national and international levels – in order to expedite the implementation of Chapter 18 and other water-related provisions of Agenda 21. Some of the proposals and recommendations included in the report may not enjoy the support by all of the participating experts and may therefore need to be further discussed in the future, in particular in the context of the policy dialogue on the strategic approaches to freshwater management under the aegis of the Commission on Sustainable Development.

## II. STRATEGIC APPROACHES FOR FRESHWATER MANAGEMENT: POLICY OPTIONS FOR CONSIDERATION BY THE COMMISSION ON SUSTAINABLE DEVELOPMENT AND POLICY-MAKERS: AN OVERVIEW

7. The rationale for sustainable development and the links between development and environment were clearly articulated in Agenda 21. The specific proposals concerning freshwater in Chapter 18 and other related provisions continue to be a basis for action. Since 1992, some countries have made progress on a path towards implementing the recommended actions at national and local levels through the adoption of integrated approaches to freshwater management. There are a number of areas, outlined in this report, which continue to build on Agenda 21. Nonetheless, there are other areas where more strategic actions are still needed in order to adapt to continually changing social and environmental circumstances and to address fundamental concerns of poverty alleviation, public health, food security and energy generation.

8. Demands for freshwater are driven by increases in population growth and sectoral pressures for both consumptive and non-consumptive uses. The sectoral demands include agriculture (irrigation and drainage), the provision of domestic water supply and sanitation, industry, energy generation, environmental requirements, amenity and tourism. The nature of these demands are further complicated by changes in patterns of consumption as a result of industrialisation, rural/urban shifts, migration, and unaccounted for water and are set against clear limits and variability in the available resource. It is increasingly clear that unprecedented demands for water supplies are resulting in continued degradation of the resource base and intensified competition for high quality water. A characteristic of these stresses is that all their components are not equally distributed in time and space.

9. There is evidence of progress in improving some aspects of freshwater resources management since 1992. Marked improvements in water quality have occurred in a number of river basins where public pressures for action have been strong. Lower discharge of toxic substances have

reduced public health risks and improved the habitats of fish and wildlife in some river basins. New technologies and water demand management have resulted in improved efficiency in water use in irrigation, industrial processing and municipal supplies. Improved soil and water conservation through the explicit linkage of water with land and forestry policies has halted land degradation in vulnerable landscapes. Institutions for integrated water management have been strengthened in several developing countries along with the adoption of new or improved water policies, information systems and action plans resulting in improvements in water use efficiencies, water quality and related ecosystems. Industrialised countries are replacing outmoded policy and regulatory frameworks as circumstances and socio-economic circumstances change. Several initiatives toward comprehensive and participatory river basin management, including international river basins, are replacing purely administrative and technical solutions. International networks in support of integrated water resources management have been created.

10. However, while many lessons have been learned, overall progress has been neither sufficient nor comprehensive enough to reduce general trends of increasing water shortages, deteriorating water quality and growing stresses on freshwater ecosystems. There is a compelling case for integrating these approaches to freshwater management into national economic frameworks as keys elements in policies for sustainable development and poverty alleviation. Socio-economic productivity can be enhanced and environmental integrity conserved as a result of this integration.

11. Integrated water resources management – within a national economic framework – is essential for achieving efficient and equitable allocation of water resources and thus for promoting sustainable economic development and poverty alleviation. The adoption of an integrated approach to environmentally sustainable management of water resources is also fundamental for protecting freshwater ecosystems, water quality and human health. At the same time, the financial sustainability of the water sector – together with policies for financial burden sharing and for ensuring access by the poor – are a prerequisite for the successful implementation of integrated water resources management. In order to be effectively implemented, integrated water resources management should also include institutional and legal capacity building, human resources development and participatory approaches. The basis for a strategic approach to integrated freshwater management can be founded on a set of key elements which bring together all the relevant parties and their particular socio-economic and environmental concerns that are bound by freshwater.

12. Most decisions and actions related to water take place at local, sub-national and national level since physical and socio-economic settings are diverse. However, local actions may have national and even regional implications for related areas of natural resource management.

13. There is much to be done, but an integrated approach is the way forward since it offers means of reconciling competing demands with dwindling supplies and a framework in which hard choices can be made and where effective operational actions can be taken. It is valuable for all countries and at all stages of development.

14. The view of the Expert Group meeting was that the future will present many challenges for the sustainable development of freshwater resources. Nevertheless, the judgement of the experts was that, in spite of the current serious concerns regarding scarcity and degradation of the quality of freshwater resources in large areas of the world, water need not become a limiting factor for sustainable development and human welfare. A series of crises, potentially with regional and even global implications, can be averted if vigorous action is taken now toward an integrated approach to freshwater resources management. Key recommendations in this regard are set out below .

## III. KEY RECOMMENDATIONS FOR AN INTEGRATED APPROACH TO FRESHWATER RESOURCES MANAGEMENT

### A. General

15. **Sustainability**. There is a need to recognise water as a social and economic good with a vital role in the satisfaction of basic human needs, food security, poverty alleviation and the protection of ecosystems. The principle of sustainability must underpin an integrated approach to managing freshwater resources in order to maintain and extend the benefits derived from natural freshwater systems.

16. **Water policy and integrated management**. As recommended in Agenda 21, it is essential for all countries to develop national, and where relevant sub-national, water policies and continually review these policies as circumstances change. Fundamental to this process is the concept of an integrated approach to the planning, allocation, development, and management of freshwater resources at the level of river basins and aquifers. The basic management unit should be designated in these policies as river basins and aquifer units.

17. **Management of the Resource**. The management of the demand for, and the allocation of, water resources should be based on principles of equity and efficient use to promote sustainable development including health, the satisfaction of basic human needs, food security and environmental protection.

### B. Capacity Building

18. **Capacity Building**. Institutional and human capacities at national and local levels will need substantial strengthening if an integrated approach is to be implemented. The need to strengthen capacity at local levels is especially strong; the training of local entrepreneurs has an important role in implementing actions. There is also a need to promote the use of indigenous technologies and knowledge, in addition to the transfer of appropriate technologies.

### C. Information management

19. **Information Management**. There is a need to finance, establish and maintain effective data collection and dissemination, information management systems and research in order to provide a sound basis for policy formulation, planning and investment decisions and operational management of freshwater resources. The collection of all freshwater resource and related socio-economic and environmental data and information needed for policy decisions, planning and management action and monitoring, should have a high and continued priority.

20. **Indicators of Progress**. Governments need to adopt, implement and monitor national water-related indicators of progress in achieving integrated water resources management, including water quality objectives. This should take account of the CSD work in this area.

### D. Environment and development

21. **Ecosystem integration**. The conservation of freshwater and related ecosystems is vital to sustainable development. These ecosystems are themselves users, water regulators and providers of freshwater-based resources (including fisheries). It is therefore necessary to promote an ecosystem approach in integrated water resources planning, development and management within the framework of river basin and aquifer systems.

22. **Human Interactions with the Environment**. There is a need to ensure that effective local and national systems are in a position to bring about productive and sustainable interactions between human activities and the ecological functioning of freshwater systems and to minimise downstream impacts including estuarine and marine environments and to reduce losses from droughts and floods.

23. **Water Quality and Environmental Sanitation**. There is a need to safeguard water quality as regards human health, productive uses of water and the protection of freshwater ecosystems. There is a need to implement measures, including sanitation programmes which have been notably neglected, to safeguard water quality recognising that poor environmental sanitation is the leading cause of human sickness in developing countries.

### E. Economics and finance

24. **Economics**. Water planning and management needs to be integrated into the national economy, recognising the vital role of water for the satisfaction of basic human needs, food security, poverty alleviation, ecosystem functioning and taking into account special conditions of non-monetary sectors of the economy.

25. **Allocation**. Water needs to be considered as a finite and vulnerable resource, and a social

and economic good, and the costs and benefits of different allocation – social, economic and environmental– need to be assessed. The use of various economic instruments are important in guiding allocation decisions.

26. **Accountability**. It is essential to ensure efficiency, transparency and accountability in water resources management as a precondition for sustainable financial management.

27. **Covering Costs**. All costs must be covered if the provision of water is to be viable. Subsidies for specific groups, usually the poorest, may be judged desirable within some countries. Wherever possible, the level of such subsidies and who benefits from them should be transparent. Information on performance indicators, procurement procedures, pricing, cost estimates, revenues and subsidies needs to be provided in order to ensure transparency and accountability, to maintain confidence and improve investment capacities in the sector.

28. **Financial resources**. Increased financial resources will need to be mobilised for the sustainable development of freshwater resources if the broader aims for sustainable economic and social development are to be realised, particularly in relation to poverty alleviation. Evidence that existing resources are used optimally will help mobilise additional finance from national and international sources, both public and private.

## F. Participation and institutions

29. **Participation**. There is a need to ensure the implementation of participatory approaches to freshwater resources management based on the recognition of the social and economic values of freshwater and its related ecosystems. Programmes to raise awareness of the issues, particularly among youth, are important. It is important that stakeholders at all levels be involved in a transparent approach for policy making, planning and management, as a 'bottom up' and 'top-down' process.

30. **Legislative and Regulatory Framework**. A legislative and regulatory framework should be established in order to facilitate integrated water resources management strategies and to ensure that the capacity exists to apply the legislation and to enforce regulations. Such framework should be conducive to private sector investment and the involvement of local service providers.

31. **Institutional Development**. There is a need to design and adapt institutions to effect an integrated approach to policy analysis and to integrated water resources management for specific environmental and socio-economic settings. The role of Government needs to be clearly defined, with a distinction between the functions of standard and regulation setting and control on the one hand, and the direct management and provision of services on the other, and between the role of government at all levels and that of the private sector and other stakeholders.

32. **Partnership**. The establishment of an enabling environment should be promoted, with

specific mechanisms, that facilitates partnerships between public, private and community organisations, local authorities, NGOs and all public and private actors.

33. **Enhancing the role of women**. Women should have an equal role with regard to water resources management at local, national and international levels.

## G. International co-operation

34. **Support for national action**. International co-operation and partnership in support of national actions are essential for achieving sustainable development, particularly in the water sector. This includes the need for mobilising and providing new and additional financial resources to developing countries as set out in Agenda 21, as well as the need for enhancing international co-operation is such areas as capacity building, transfer of technology, research and information exchange.

35. **Promoting a common approach**. The United Nations system should play an active role in harmonising, at international and national levels, the recommendations being made to countries for integrated water resources management strategies.

36. **Information exchange**. Governments should promote vital information exchange and dissemination through the greater use of Internet and other modern means of communication.

37. **Donor-recipient dialogue**. Governments and the international community need to strengthen consultation mechanisms aimed at improving donor/recipient dialogues for the mobilisation of financial resources in a well-targeted and predictable manner, based on national action plans with a special focus on integrated water resources management which recognises the need of the poorest communities.

38. **Regional consultations on drought and flood preparedness**. There is a need to establish or strengthen mechanisms for regional consultations on drought and flood preparedness and early warning systems and mitigation plans at local and national levels, regional emergency funds and/or collective insurance programmes. At the international level, there is a need to maintain support of these activities following the close of the IDNDR (1999).

39. **International Watercourses**. Riparian States are encouraged to co-operate among each other on matters related to transboundary water resources, building on existing agreements principles, arrangements, instruments and programmes of action, taking into account the interests of all riparian States concerned. Such efforts, upon common requests of concerned States, may need to be supported through international co-operation.

40. **Water-Related International Conventions and Programmes for Action**. In the formulation and implementation of integrated water resources management policies and

programmes, there is a need to take into account actions to implement a number of existing Conventions and Programmes of Action relevant to freshwater, in particular conventions on Biodiversity, Desertification, Climate Change, Wetlands (RAMSAR) and International Trade in Endangered Species (CITES) as well as the Global Programme of Action for the Protection for the Marine Environment from Land-Based Sources of Pollution.

41. The Expert Group Meeting invites the Commission on Sustainable Development to give consideration to the general conclusions and recommendations outlined above, together with more detailed proposals for action contained in the annexed reports of the four Working Groups. It is hoped that the CSD will support these recommendations and proposals for action, thus promoting an integrated approach to freshwater management at all levels while ensuring that national action is supported through adequate means of international co-operation.

42. Furthermore, the Expert Group Meeting recommends that the CSD invites countries to submit, by 2002, information concerning their national water policies and related plans and progress in their implementation.

## ANNEX I

Water as a Key Resource in Sustainable Development

Report of Working Group 1

### I. INTRODUCTION

43. The Working Group's discussion was based upon a recognition that water is fundamental to sustainable development and a basic component of national and regional ecosystems. In many parts of the world, current patterns of development and use are not sustainable, environmentally, socially and economically.

44. The four stage discussion process was; (a) a brief consideration of the stresses on freshwater; (b) a brief consideration of the role of integrated water resource management in easing the stresses and resolving competition for limited water resources; (c) a more detailed consideration of the policy responses and choices, the development of strategies or lines of approach and the choice of management options; and (d) the articulation of actions at international, regional, national and local level (in which 'local' comprises all sub-national levels from states, provinces, regions, municipalities, districts down to community level).

### II. THE STRESSES

45. There are a number of unprecedented demands for water supplies, resulting from population growth and sectoral pressures, both as consumptive and non-consumptive uses. This includes in particular, agriculture (particularly irrigation and drainage), the provision of domestic water supply and sanitation, industry, energy production, environment/amenity(including tourism)/ecosystems, changes in patterns of consumption as a result of industrialisation, rural/urban shifts, migration, and unaccounted for water. A characteristic of these stresses is that all their components are not equally distributed in time and space. All are seeking to maximise the stream of social and economic benefits from a limited resource base.

46. Unprecedented impacts on the water resource base include reduced base flows, declining aquifer reserves, point and non-point pollution to surface and groundwater, background levels of contamination, and climatic variability and hydrological uncertainty. These together are having unprecedented impacts on socio-economic development, which can lead to deteriorating public health (indicating that health aspects need to be explicitly factored into the planning process) users forced to internalise the externalities of other users (leading, for example, to upstream/downstream disputes), increasing costs of water development, limitations on development, and impacts on national security.

47. This can result in the degradation of the resource base, intensified competition for water quantity and quality (for example, agriculture looking for high volumes of low quality water, municipalities looking for small volumes of high quality water) and the loss of productivity related to water.

48. The strategic challenges is to ensure sustainability of the resource in the face of the above stresses.

## III. INTEGRATED WATER RESOURCES MANAGEMENT

49. There is a compelling case for adopting integrated water resources management approaches, although some past attempts have not been fully successful. To achieve success, water management should be conducted within a national economic framework as a key element in sustainable economic development and poverty alleviation. When doing so, countries should ask precisely what role water resources management can play in (a) promoting socio-economic productivity through co-ordination and integration of sectoral policies and explicit linkage of water in the economic framework and planning process; (b) promoting sustainability - maintaining the asset value of the water resource base; (c) mitigating climate change by using energy from water and the use of solar and wind energy for water pumping; (d) promoting soil and water conservation through explicit linkage of water with land and forestry policies; (e) promoting peace and security through co-operation in the management of international water systems.

50. Such management can also provide for: (a) reconciling equity and efficiency in the allocation of resources, provision of water services and the protection of the resource base, that is who pays ? and who benefits ? and; (b) promoting the use of best practices and appropriate technologies for managing water demand and supply.

51. Integrated water resources management is most effective when conducted in the spatial framework of the river basin or aquifer and should be supported by integrated information management systems.

## IV. THE IMPLICATIONS FOR POLICY RESPONSES AND MANAGEMENT STRATEGIES

### A. The Development of National and Sub-national Water Policy and Programmes

52. The Commission on Sustainable Development (CSD) should urge, as recommended in Agenda 21, that each country adopt a national water policy and accompanying programmes,

where this already exists, review and revise such policy and programmes as necessary. The CSD should call upon countries to submit information on their policy and national programmes in the year 2002. Policies should be developed in an open and transparent process with the participation of all stakeholders.

53. In some large countries, the responsibilities for the development and implementation of such policies and programmes may need to be divided between national and sub-national (state/province) entities.

54. The elements of such national instruments could include, *inter alia*:

(a) The formulation and implementation of research, monitoring and information management programmes for understanding the quantity and quality of the resource base and its variability in time and space, and the social and economic forces affecting them;

(b) The allocation of water resources, taking into account the principle that access to safe drinking water and sanitation is essential for satisfying basic human requirements, that other allocations should be based upon consideration of economic efficiency and equity, and that allocations should be based on sustainability of the resource base, including an ecosystem approach and environmental protection;

(c) The incorporation of health concerns into the freshwater management process through the adoption of explicit health objectives in planning, the use of health indicators in routine monitoring and the assessment of health outcomes in evaluation;

(d) The protection of the aquatic environment, including wetlands, from local and diffuse pollution sources and from threats posed by exotic influences to maintain physical and chemical balances and biological integrity;

(e) The management of demand as a key part of the policy, focusing on water conservation through re-cycling and re-use and where appropriate to be driven by pricing policies and by adopting best practices and appropriate technologies;

(f) The management of water supply in order to deal with annual and inter-annual variations, to support food security and other purposes;

(g) The provision of appropriate mechanisms for management of land and water resources on an integrated basis within natural hydrological and hydrogeological units (river basins and aquifers), providing for necessary interactions with administrative organisations where provincial, municipal and district boundaries do not coincide with basin or aquifer boundaries;

(h) The inclusions of provisions for coping with hydrological extreme events and

disturbances, particularly droughts and floods and erosion, through implementation of programmes of drought preparedness and flood protection and mitigation including adequate monitoring and early warning systems;

(i) The development and sustenance of appropriate institutions including cross-sectoral water councils and recognising needs for capacity building, public information and education.

### B. Developing Management Strategies

55. Finding strategic management approaches to implement the policy and to support social, economic and environmental policies, as well as promoting the long term sustainability of the water resource base requires a choice among a number of management tools. Institutional design, economic instruments, advocacy, public education, ( *i.e.* the whole range of management tools) can be considered. Particular attention need to be paid to ensuring that the poor benefit from the strategy adopted. However, given that it is not possible to do everything at once and given the known constraints, the thematic areas in which strategic cross-sectoral interventions are possible are outlined below.

(a) Build awareness at all levels (International, regional and at shared basin/aquifer level). This includes the role of education and the recognition of the needs of specific groups, such as women;

(b) Build capacity including strengthening participatory frameworks, promoting community ownership and management, developing water resources management skills and institutions at basin/aquifer level, developing operational monitoring and evaluation procedures; developing operation and maintenance and, promoting public - private sector partnerships;

(c) Promote an enabling environment through:(i) declaring a water policy with explicit recognition of basin and aquifer management; (ii) continuously monitoring and evaluating policy and action plans; (iii) developing an effective legal and regulatory framework including those needed within a basin/aquifer framework; (iv) ensuring effective regulation; (v) decentralising the implementation of regulatory and operational functions to the extent practical; (vi) adopting appropriate instruments for allocation; and (vi) sustaining water and socio-economic data and information systems;

(d) Ensure sound sectoral strategies through: (i) setting sectoral targets and developing visible state, process response indicators, ensuring that targets are directed especially towards the poor; (ii) extend sustainable water supply and sanitation services; (iii) increasing agricultural/aquaculture productivity and food production per unit of water; (iv) promoting water conservation through judicious use of procedures and technology, old as well as new; (v) harmonizing water resources management and energy sector strategies;

(vi) promoting soil and water conservation as part of basin-wide strategies; (vii) integrating erosion and flood control with land and forestry development; and (viii) integrating water/soil/air pollution control measures;

(e) Cope with variability and change including; structural and non-structural solutions for flood damage reduction; reducing impacts of flooding on inhabitants of affected areas, and developing programmes for drought preparedness;

(f) Promote regional co-operation through: (i) developing approaches to international management but building on a sound national base; (ii) adopting co-operative strategies; (iii) facilitating information exchange between riparians; and (iv) promoting river basin organisations and basin level planning and development.

## IV. IMPLEMENTING THE MANAGEMENT STRATEGIES

56. Suggested actions to be taken within countries for implementing management strategies.

(a) In considering the management strategies and implementation measures to be adopted, countries need to develop profiles of current freshwater management identifying the factors that impede progress toward integrated water resources management;

(b) Starting from the local level, there is a need to; analyse and identify capacity building requirements through research and analysis; design appropriate water resource and environmental management strategies; integrate local level initiatives in overall basin planning framework, and strengthen the capacity of communities in the management of their water resources;

(c) Develop consensus among all stakeholders through broad based consultations with a view to developing political will;

(d) Develop estimates of national water expenditures and benefits in order to demonstrate the significance of the water sector for the national economy and to assist in setting priorities;

(e) Adopt technologies combining indigenous and modern techniques, especially for water conservation, re-use and improved efficiency in irrigation and other sectors;

(f) Co-ordination and monitoring of water withdrawal at national or basin/aquifer level to ensure the sustainability of the resource base;

(g) Support water monitoring and undertake and publicise studies of the economic value of water data.

57. Recommendations at the international level.

(a) The Expert Group Meeting recommended to the CSD the completion of the development of water sector indicators in the context of its programme of work on indicators of sustainable development, taking into account on-going work in this area;

(b) That international co-operation on water related natural disasters be continued after the end of IDNDR (1999), in particular through the maintenance of early warning systems and the exchanges of information on disaster loss reduction methods;

(c) Promotion by the international community of information exchange with special efforts to link all countries electronically;

(d) International organisations should mobilise and co-ordinate assistance for education, training and capacity building;

(e) Development of a consolidated United Nations Guidebook on integrated water resources management to replace existing sectoral guidelines;

(f) Support by Governments and the international community for the maintenance of international information and monitoring networks;

(g) Harmonisation by Governments of data collection at the basin/aquifer level;

(h) Multi and bi-lateral partners should emphasise integrated water resources management, taking into account the needs of the poorest communities.

## V. TRANSBOUNDARY WATER SYSTEMS

58. Riparian States are encouraged to co-operate among each other on matters related to transboundary water resources, building on existing agreements principles, arrangements, instruments and programmes of action, taking into account the interests of all riparian States concerned. Such efforts, upon common requests of concerned States, may need to be supported through international co-operation.

# ANNEX II

Freshwater Ecosystems and Water Quality

Report of Working Group 2

## I. INTRODUCTION

59. The report provides a brief consideration of the role of freshwater ecosystems and water quality in integrated water resources management and sets out a range of specific actions which can be taken up by national Governments, as appropriate, to accelerate the implementation of chapter 18 and other water related chapters of Agenda 21. These actions are guided by policy choices (the stated objectives of governments) and strategic management options (how to put the policy into place within national social and economic frameworks). Finally, suggested objectives are recommended for the Commission on Sustainable Development .

## II. THE ROLE OF FRESHWATER ECOSYSTEMS AND PROTECTION OF WATER QUALITY IN INTEGRATED WATER RESOURCES MANAGEMENT

60. Chapter 18 of Agenda 21 states that one of the objectives of integrated water resources management is the "maintenance of ecosystem integrity, according to a management principle of preserving aquatic ecosystems, including living resources, and of effectively protecting them from any form of degradation on a drainage basin basis". It also recommends the adoption of an integrated approach to environmentally sustainable management of water resources, including the protection of aquatic ecosystems and freshwater living resources, and the integration of water quality elements into water resources management.

61. However, current integrated water resources management practices often consider ecosystems primarily as water users, with little attention given to their vital role as providers and regulators of water resources. Little consideration has been given to the other services and goods that ecosystems provide, such as flood regulation, Biodiversity conservation, fish and firewood. It is of fundamental importance to the long term availability and sustainable management of water resources that the maintenance of ecosystems and the strengthening of their role as providers of services and goods be recognised.

62. Similarly, in spite of high-level of commitments to action made at both the International Conference on Water and the Environment and the Earth Summit, water quality has invariably been subordinated to water quantity and sanitation has been neglected. The result of that neglect is an emerging crisis of water quality, damaging public health and restricting economic development. In order to deal effectively with this neglect of both freshwater ecosystems and

water quality protection, and thus accelerate the implementation of the activities in the area of freshwater ecosystems and water quality proposed in Chapter 18 of Agenda 21, a number of specific actions in both areas are recommended primarily to national governments.

## A. Proposed actions in the area of freshwater ecosystem management

63. The proposed actions in the area of freshwater ecosystems are aimed to achieve three major goals: (a) ensure the integration of the ecosystem approach into integrated water resources management, recognising the role of ecosystems as users, providers and regulators of freshwater and freshwater-based resources (including fisheries); (b) ensure the effectiveness of local or national systems for controlling interactions between human activities and functioning of ecosystems; (c) ensure participatory approaches to ecosystem management based on recognition of the economic and social value of freshwater ecosystems. The overall goal is to maintain the functioning of ecosystems and to protect water quality as a base for sustainable development. Most of the above-mentioned actions are for national or local levels but many will require appropriate international action and support.

### 1. Ensure the integration of the ecosystem approach into integrated water resources management, recognising the role of ecosystems as users, providers and regulators of freshwater and freshwater-based resources (including fisheries)

64. The following specific actions were identified to address these goals.

(a) Strengthen national programmes for gathering, analysing, monitoring and disseminating physical, economic and social data necessary for ecosystem management, build institutional capacity to understand and assess ecosystem functions and values, and incorporate them into the decision-making process;

(b) Carry out comprehensive assessments of functions and values of ecosystems in terms of their social, economic and environmental benefits and costs, in order to manage change;

(c) Promote research at both national and international levels to determine the economic value (in monetary terms) of both the benefits provided by ecosystems and the costs of their degradation;

(d) Raise awareness of ecosystem functions and values at all levels, from school children (local) to national policy-makers through both national and international campaigns.

### 2. Ensure effective local or national systems to control interaction between human activities and functioning of ecosystems

65. The following specific actions were identified to address this goal.

(a) Use environmental impact assessments to measure and monitor impact of human activities on ecosystems;

(b) Launch co-ordinated international programmes to identify and control plant and animal pest species, such as water hyacinths, that threaten ecosystem integrity;

(c) Establish a legal framework for allocating adequate amounts of water to ecosystems, including for the restoration of degraded ecosystems;

(d) Incorporate protection of human health dimension in the management of freshwater ecosystems;

(e) Ensure coverage of the major human impacts on freshwater ecosystems, such as in river structure management, impoundment, abstraction, point discharges, diffuse inputs and fisheries/aquaculture;

(f) courage countries to reduce or eliminate subsidies to activities that damage ecosystems;

(g) Apply basin-wide approaches to freshwater ecosystem management for both surface and ground water;

(h) Establish measurements and research programs for understanding the quantity and quality of the resource base and its variability in time and space.

### 3. Ensure participatory approaches to ecosystem management based on realisation of the economic and social value of freshwater ecosystems

66. The following specific actions were identified to address this goal.

(a) Promote and disseminate best practices and traditional knowledge in ecosystem management;

(b) Introduce measures to decentralise decision-making and empower local communities to participate in efforts to protect freshwater ecosystems;

(c) Launch information campaigns and information networks at both national and local levels

to raise public awareness and foster social mobilisation to the need for protecting freshwater ecosystems;

(d) Improve local institutional capacity and promote human resources development to strengthen community participation, taking into particular account the role of women in rural communities as protectors of the environment.

### B. Proposed actions to protect water quality and human health

67. The proposed actions in the area of water quality are aimed to achieve four major goals: (a) establish objectives necessary to safeguard water quality as regards human health, productive uses of water and the protection of freshwater (b) implement measures in support of the objectives for safeguard water quality (c) establish effective data collection programmes to provide a sound basis for establishing goals and monitoring progress towards them (d) significantly accelerate access to environmental sanitation (including solid and liquid waste management) in order to reduce the threats to human health and freshwater ecosystems. Most of these actions are for national or local levels but many will require appropriate international action and support. It should be recognised that poor environmental sanitation results in serious degradation of ecosystems and is the leading cause of human diseases.

#### 1. Establish objectives necessary to safeguard water quality as regards human health, productive uses of water and the protection of freshwater ecosystems

68. The following specific actions were identified to address these goals.

(a) Set requirements for drinking-water quality;

(b) Set targets for ambient water quality in relation to intended uses and the protection of the freshwater ecosystem;

(c) Set requirements for effluent discharges and the control of pollution from non-point sources.

#### 2. Implement measures in support of the objectives for safeguarding water quality

69. The following specific actions were identified to address this goal.

(a) Raise political awareness of the cost of pollution and build up support for relevant reform,

for example, through studies of the economic and health costs of water pollution;

(b) Document or initiate successful examples of complex programmes to remedy water quality problems as a basis for sharing know-how;

(c) Strengthen capacities to plan and implement programmes for capital investment, delivery of services, maintenance of systems, and for monitoring and regulating water quality requirements;

(d) At national and international levels, prioritise key knowledge gaps that inhibit effective water quality management and develop research programmes to fill the gaps.

### 3. Establish effective data collection programmes to provide a sound basis for establishing goals and monitoring progress towards them

70. The following specific actions were identified to address this goal.

(a) Establish standards for water quality data which ensure their reliability and consistency;

(b) Evaluate and modernise, as appropriate, data programmes so that they are cost-effective and focused on data needs for water policy and management decision-making;

(c) By 2002, carry out a national water quality inventories for surface and ground waters, and identify gaps in information.

### 4. Accelerate significantly access to environmental sanitation (including solid and liquid waste management) in order to alleviate poverty, improve human health and protect freshwater ecosystems

71. The following specific actions were identified to address these goals.

(a) Redress the imbalance in the resources devoted to sanitation, including capital investments, untapped community efforts, and innovative financing and credit mechanisms to expand sanitation coverage;

(b) Ensure that new water programmes are accompanied by safety disposal measures for the resulting waste water;

(c) In addition to actions by national and local authorities, introduce measures to empower local communities to participate in efforts to extend access to sanitation, taking into particular account the role of women;

(d) Improve sanitation services through hygiene education, innovative low-cost systems, such as dry- and low-water-use systems, and targeting projects on health objectives;

(e) Support recent national and international initiatives to expand sanitation coverage through information sharing among governments, communities NGOs and the international community.

### C. Overall goal for protecting freshwater ecosystems and water quality

72. Maintain the functioning of ecosystems and protect water quality as a base for sustainable development, and establish or strengthen systems to monitor progress on drinking-water supply and sanitation, as well as water quality and management generally, at local, national and international levels, and to identify emerging issues and needs.

### D. Support, in financial and operational terms, the integration of ecosystem approaches and water quality into integrated water resources management

73. The following specific actions were identified to address these goals.

(a) Donors should consider ensuring that an adequate share of their ODA is allocated to the protection of freshwater ecosystems;

(b) International financial organizations and donor Governments need to take steps towards the co-ordination of international financial flows in the form of direct grants and loans in concessional terms to recipient countries for the protection of freshwater ecosystems;

(c) Establish appropriate budgetary mechanisms specifically designed to finance measures to protect or reverse the degradation of freshwater ecosystems

## III. SUGGESTED OBJECTIVES FOR THE COMMISSION ON SUSTAINABLE DEVELOPMENT

74. The CSD is invited to recommend that each country adopt a national or local water policy, including measures to protect freshwater ecosystems, or where this exists, to review and revise as necessary. CSD may consider calling upon countries to report on their policy and the progress in the year 2002. Policies should be developed in an open and transparent process with public and stakeholder participation. It is recommended that such policies should be based on the recognition of water as a national and international heritage – with the protection of freshwater ecosystem as an integral part of this effort -- and should address *inter alia:*

(a) The principle that water resources allocation decisions should take into account that access to safe drinking water and sanitation is essential for satisfying basic human needs and that the allocation to other users must be based on economic efficiency and sustainability criteria;

(b) The need for demand management as a key element of integrated water resources management policy, focusing on water conservation through re-cycling and re-use, and where appropriate to be driven by pricing policies and by adopting best practices and appropriate technologies;

(c) The need to provide appropriate mechanisms for management of land and water resources on an integrated basis with national hydrological and hydrogeological units and to provide for the necessary interaction with administrative organisations across municipal and district boundaries;

(d) The need to formulate measures for coping with extreme climatic and meteorological events, droughts and floods, through implementation of programmes of drought preparedness and flood protection and mitigation including adequate monitoring and warning systems;

(e) The need to protect the aquatic environment, including wetlands, from local and diffuse pollution sources and from threats posed by exotic influences to maintain physical, chemical and biological balances;

(f) The need to develop and support appropriate institutions including cross-sectoral water councils and to recognise the importance of capacity building, public information and education;

(g) The need to take into account actions required to implement the Conventions on Biodiversity, Desertification, Climate Change, Wetlands (RAMSAR) and International Trade in Endangered Species (CITES) as well as close linkages with the implementation of the Global Programme of Action for the Protection for the Marine Environment from Land-Based Sources of Pollution.

# ANNEX III

Economic and Financial Issues

Report of working group 3

## I. INTRODUCTION

75. This annex provides a brief review of economic and financial issues that were discussed on the basis of recommendations of chapter 18 of Agenda 21 and recommendations by the Commission on Sustainable Development. The discussion aimed to elucidate a range of policy options aimed at enhancing the financing of water resources and the economic performance of water resources development and utilisation.

76. It was recalled that as stated in the Programme For The Further Implementation of Agenda 21, the inter-governmental process under the aegis of CSD on Freshwater will be fully fruitful only if there is a proved commitment by the international community to the provision of new and additional financial resources for the goals of this initiative.

## II. ECONOMIC AND FINANCIAL CONCERNS IN THE DEVELOPMENT AND UTILISATION OF WATER RESOURCES

77. Water is a finite and vulnerable environmental resource and a social and economic good. The allocation of scarce water resources among competing uses has fundamental effects on ecosystems and the national economic development in terms of employment and the generation and distribution of income and poverty alleviation. Such policies can also have significant impacts on land use planning and the movement of population from rural to urban areas. The access of suitable amounts of water for basic human needs should be incorporated in the formulation and implementation of economic policies for resource development and allocation.

78. The use of pricing policies and other economic instruments are essential for the effective and equitable allocation of the resource taking into account social and economic criteria as well as basic human needs. Economic evaluations need to consider positive and negative impacts on health, human and ecosystems. Inadequate economic policies have often contributed to the poor performance of water utilities thus decreasing their ability to attract financial resources from the public and private sector as well as from the international community. To the extent that subsidies are required for social reasons, they should be well targeted to the intended beneficiaries and managed in a fully transparent way. Subsidies should be seen in the context of poverty alleviation as measures which, in time, could be phased out. Additional funding, targeted mainly to peri-urban and rural areas, is required.

79. While the public sector has traditionally played a major role in financing water resources development, there is an increasing recognition of the need for the involvement of other stakeholders (local private sector and community based organisations) and financial sustainability.

80. Financial support for the collection, processing and dissemination of timely, reliable and demand-oriented information is essential to the effective management of water resources.

81. In addition, the number of water related natural disasters (flood, drought) have been rising rapidly over the past decades. Therefore, the economic evaluation for the losses due to these phenomena and financial provision for their prevention and mitigation should be of priority.

## III REASONS FOR ANALYZING ECONOMIC AND FINANCING ISSUES IN THE WATER SECTOR

82. Several reasons justify the interest in analysing issues related to economic and financing considerations in the water sector. Among those are:

(a) The importance of water as a natural resource with a social as well as an economic good ;

(b) Given that the sector requires new and additional financial resources, the need to understand how and by whom the water resources sector is financed, particularly in the case of the service component of resource management;

(c) The importance of defining the role of the government and the private sector and their financial obligations;

(d) The need to take into account differences between rural and urban areas and the different users (agricultural, industrial, energy, etc...) in view of the wide range of water users in the economic spectrum;

(e) The need to ensure the security and provision of water through incentives provided by government for the purpose of satisfying basic human needs, taking into account that the provision of water supply to some areas of the sector is economically justified at the macro level despite the non profitability in terms of internal cost recovery, particularly in under privileged areas;

(f) The need to understand and use economic tools and apply them into the water sector to achieve greater efficiency;

(g) Decision makers need to know the cost of provision of water, establish long term economic perspective of water in the overall economy, and take into account the social

implication of water resources, and determine appropriate development scenarios;

(h) The necessity to link performance and financing to cost recovery and to show users the benefits of using sustainable management solutions and the impact of such actions on the economy;

(i) Social and environmental cost/benefit analysis needed in water related projects;

(j) Deficient practices exist in budgeting development, operation and maintenance;

(k) Integration of water into national, sub-national, and river basin planning as the resource is needed in all sector activity;

(l) The fact that lack of water in an area will result in migration to areas where the resource is available, shows the need for integration of water resources development and management with land use planning which will result in stabilising rural populations through added employment opportunities and poverty alleviation.

(m) Reforms of the water sector will result in economic benefit, specially at local level;

(n) The need to finance capacity building to improve management;

(o) Funding basic water data collection and management must be sufficient to understand the nature and variations of the resource;

(p) Needed efforts to prevent and mitigate disaster losses;

(q) The fact that foreign and national private investments are increasing notably in urban areas does not minimise the need for significant increases in national and international financing in view of the very large investment requirements.

## IV STRATEGIC PRINCIPLES AND RELATED PROPOSED ACTIONS AND THEIR IMPLEMENTATION

### A. Goal 1: Ensure the integration of water into the national economy, recognising it as a social and economic good, vital for the satisfaction of basic human needs, food security, poverty alleviation, and the protection of ecosystem functioning, and applying economic instruments in its management

83. In order to achieve this goal, the following strategic issues were identified.

(a) Recognise water as a social good, for the satisfaction of basic human needs, to be provided to all, with due attention given to gender dimensions;

(b) Recognise water as a finite and vulnerable resource with a value in alternative uses, environment and ecosystem maintenance, and consider this value in the intersectoral allocation of water for different uses taking into account water quality;

(c) Estimate and consider «intangibles», such as social and environmental values of water in dealing with intersectoral allocations;

(d) Consider that special conditions apply in rural non/monetary sectors of the economy in which economic instruments may be difficult to apply.

84. The following specific actions were identified to address these issues.

(a) Apply demand management approaches based. on assessment of demands and users' willingness and ability to pay;

(b) Ensure that a proper regulatory environment exists for cross-sectoral consideration of user charges for different sub-sectors;

(c) Collect and disseminate internationally experiences, good practices and instruments for evaluation of water for different uses, including environmental and ecosystem maintenance. Establish mechanisms for applying these practices and instruments at the appropriate management levels;

(d) Develop and grant legal concessions for water abstractions and infrastructure management at the local level;

(e) Consider conditions in poor rural communities by focusing on low cost solutions, and factoring in contributions in kind by local users through labour and other inputs;

(f) Include environmental parameters in the evaluation of water related projects in all sub-sectors.

### B. Goal 2: Ensure efficiency, transparency and accountability in water resources management ss a precondition for sustainable financial management

85. The following strategic issues were identified as being pertinent to achieving this goal.

(a) An efficient and transparent financial management is a precondition for effective cost recovery;

(b) The provision of high-quality services to users is a precondition for effective cost recovery;

(c) The allocation and use of revenues from water within the water sector itself, and within local communities, must be transparent;

(d) The application and acceptance of the principle of water as an economic good requires full transparency and accountability in charges, subsidies, cross-subsidies and taxes applied to different user groups;

(e) Investments in the water sector should be made with the objective of maximising the output and productivity of water resources.

86. The following specific actions were identified to address these issues.

(a) Ensure transparency in charges, subsidies, cross-subsidies and taxes;

(b) Ensure transparency in the management of water service providers (water utilities), and avoid monopolies whenever possible;

(c) Develop and apply criteria and standards for performance of utilities, and link these to user charges;

(d) Ensure regular public, independent audits of service providers;

(e) Monitor the performance of equipment, and ensure that procurement takes place in a transparent manner, and through international tender. Avoid to the extent possible procurement through tied aid;

(f) Develop and apply instruments for charges in the irrigation sector through studies and collection and dissemination of international experience;

(g) Develop and apply instruments for pollution charges through studies and collection and dissemination of international experience;

(h) Pay particular attention to avoiding cost and time overruns.

### C. Goal 3: Ensure the establishment of public/private partnership

87. The following issues were identified as being pertinent to achieving this goal.

(a) The existence of a clear definition of and distinction between the role of government, the private sector and other stakeholders, where appropriate to local situations;

(b) The establishment of an environment conducive to private sector investment;

88. The following specific actions were identified to address these issues.

(a) Require environment reviews for export guarantee (credits) to attract private funds and services;

(b) Institute clarification and awareness building measures with respect to defining and understanding the role of private sector;

(c) Define the roles and responsibilities of the partners in public / private partnerships (PPP), including NGO's, local authorities and community based organisations. Promote organisational changes in Government accordingly;

(d) Define and take into consideration elements of risks in water resources management and specify risk responsibilities of the various partners;

(e) The resources to be provided by both the service provider and the Government have to be clearly defined, controlled and clearly spelled out

### D. Goal 4: Ensure financial sustainability

89. The following issues were identified as being pertinent to achieving this goal.

(a) The need for determining means and methods to be put in place to facilitate gradual transition towards full cost recovery, whereby all costs are recovered from users or otherwise funded on a sustainable basis;

(b) The need for considering different criteria to determine financial burden of the different users;

(c) The need to ensure that the sector should be financially self sustainable.

90. The following specific actions were identified to address these issues.

(a) Identify criteria for levels of cost recovery for different categories of users, through economic analyses and consultations with users groups;

(b) Develop financial and regulatory instruments to facilitate private investments;

(c) Implement adapted financial policies for poorest and rural areas;

(d) Develop adapted financial solutions for sanitation;

(e) Redirect public savings to «sustainable development» actions;

(f) Allocate resources from water charges for Research and Development purposes;

(g) Link financial self sustainability of local services with decentralisation through the participation of users and mobilisation of local entrepreneurs;

(h) Diversify sources of funding.

### E. Goal 5: Ensure adequate financing of the water sector

**The following issues were identified as being pertinent to achieving this goal:**

(a) The adequacy of absorptive capacity and availability of financial resources within the sector;

(b) The lack of political awareness and will to implement strategies aimed at recovering costs;

(c) The requirements of external finances limit the flows of resources to the sector.

**The following specific actions were identified to address these issues:**

(a) Improve donor – recipient dialogue on financing;

(b) Ensure to include in the estimation of costs, all operational, maintenance and other costs;

(c) Put in place a national fund for financial resources mobilisation and allocation;

(d) Urge the international community and Governments (in both recipient and donor countries) to maintain and consider increasing their financial support to freshwater resources development. The impact of such a support would be far more significant if it were well targeted and predictable;

(e) Improve communication and co-operation among sources of financing of the sector;

(f) Mobilise largely untapped community financing resources and provide credit mechanisms which foster self help efforts by individuals;

(g) Identify and mobilise innovative source of funding;

(h) Increase water sector finances where absorptive capacity exists. Where it does not, improve or upgrade the adsorptive capacity;

(i) Particular attention must be made to include operational, maintenance and depreciation costs in all water related projects.

### F. Goal 6: Ensure financing of water resources data knowledge base as a basis for analysis and research for better understanding and decision making

91. The following specific actions were identified to address these issues.

(a) Foster links between environmental impact assessment with data base development;

(b) Create national water funds for the development of the water resource knowledge base, including contributions from users;

(c) Support integrated water resource information systems and their management, particularly early warning systems;

(d) Support for awareness program for understanding the need for data collection, decision making, policy impact assessment and public information as well as education.

### G. Goal 7: Ensure that provision is made for economic costs analysis of extreme events or chronically prone areas to flooding and drought

92. The following specific actions were identified to address these issues.

(a) Create mechanisms of regional consultation including meetings, creation of regional solidarity funds with the assistance of the international community;

(b) Put in place drought and flood preparedness programs and early warning systems;

(c) Put in place mitigation plans at local and national levels;

(d) Put in place regional emergency funds and insurance programs for extreme events;

(e) Prepare drought as well as flood preparedness mitigation programs.

## IV. PRIORITY AREAS IN NEED OF FINANCING

93. Areas in need of financing were grouped into institutional and capacity building, integrated water resources planing and management, support to underprivileged area and investment initiatives.

(a) Institutional capacity building/support to policy including support to policy and legislation;

(b) Integrated Water Resources Management;

(c) Data collection, monitoring and integrated information management systems;

(d) Knowledge of hydro-ecosystems functioning;

(e) Demand and supply assessment;

(f) Feasibility and thematic studies;

(g) National, sub national and river basin action plans;

(h) Local support for sustainable solutions to communities, associations, local authorities and emerging local private sector;

(i) Investment for those without access to basic needs.

## V. STRATEGIES/ACTIONS FOR COST REDUCTION

94. Several strategies and actions could be recommended in addressing economic and financial issues related to integrated water resources management. Among the measures of particular interest are cost reduction means including:

(a) Restructuring of existing institutions to reduce cost;

(b) Improving existing management such as demand management/leak reduction;

(c) Promoting competition in service provision;

(d) Improving existing data collection network;

(e) Provision of financial incentives, including tax exemption for equipment and for private sector;

(f) Investing in under privileged areas;

(g) Reliance on low cost systems and appropriate technologies including indigenous technologies;

(h) Increasing accountability in system management.

## VI. SUMMARY OF KEY ISSUES AND RELATED ACTIONS RECOMMENDED

95. Water must be integrated into the national economy, recognising it as a social and economic good, vital for ecosystem functioning and applying economic instruments in its management. As such, economic policies must consider «intangibles» such as social and environmental values of water as well as the special conditions in non monetary sector economies.

96. Actions should be oriented towards applying demand based management approach taking into account the notion of users' willingness and ability to pay. Resources must help in the collection, dissemination and transfer of international experiences in economic evaluation and financial management of water resource. Where possible, support should be provided to strengthen private sector, community based participation as well as the development of appropriate and low cost technologies. Also, assistance should continue in favour of public institution in improving their role.

97. Efficiency, transparency and accountability are keys to sustainable financial management of water resources. For these, several actions are required. Information should be made public for performance indicators, procurement procedures, pricing policies and components, cost estimates and revenues. Determination and allocation of subsidies, cross-subsidies, charges should be transparent in order to maintain confidence and improve investment revenues in the sector. Instruments such as auditing could help achieve this goal.

98. Integrated water resource management required closed partnership between public and private sectors. As such, a clear definition and distinction should be made of the role of government, the private sector and other stakeholders, where appropriate to local situations. In doing so, it is important that the institutional and legal environments be conducive for private sector investment and the emergence of local water service providers. Particular attention has to be given to financial and economic risk assessment.

99. Regardless of policies, financial sustainability is a prerequisite for sustainable integrated water resource management. Therefore, it is a necessity to facilitate a gradual transition towards

full cost recovery, criteria for financial burden sharing and the development of financial and regulatory instruments. Also, measures needed include adapted financial policies for the poorest and rural areas and the allocation of resources from water charges to research and development purposes. Emphasis should be placed on participation of users, training of local entrepreneurs and the diversification of sources of funding. Furthermore, a strong link should be made with the decentralisation process.

100. At the same time, it is important to ensure adequate financing of the water sector. Related issues in this case concern the adequacy of absorptive capacity and availability of financial resources within the sector, the lack of political awareness and will to implement strategies aimed at recovering costs as well as the requirements of external funding sources which limit the flows of resources to the sector. Thus, actions should be aimed at improving donor – recipient dialogue on financing , the creation of national fund for financial resources mobilisation and allocation in the water resources sector. The international community and Governments (donors and recipients alike) should be urged to maintain and encourage to increase their assistance to the water resources sector in a predictable manner and targeted to solve specific problems. Value can be added by improving communication and co-operation among sources of financing as well as the mobilisation of largely untapped community financing resources and through the provision of credit mechanisms which foster self help efforts by individuals. This includes, the mobilisation of innovative source of funding.

101. Financing of water resources data knowledge base is a basis for analysis and research for better understanding and decision making. Decision making rely, to a large extent, on the existence and the availability of data and their analysis. Thus is essential that adequate financial resource be provided for better understanding of water resource knowledge base. This implies, among others, the fostering of links between physical, socio economic and environmental impact assessment with data base development, the creation of national water funds. Support should similarly be mobilised for integrated water resource information systems and their management, particularly early warning systems Also, awareness for understanding the need for data collection, decision making, policy impact assessment and public information as well as education deserve an attention.

102. The frequency of extreme events have increased in recent decades. Therefore, provision should be made for economic costs analysis of these events and for the management measures for chronically prone areas to flooding and drought. Several main actions may concurred to achieving this goal. The creation of mechanisms of regional consultation, regional solidarity funds, drought and flood preparedness programs and early warning systems, mitigation plans at local and national levels, regional emergency funds and insurance programs for extreme events could be considered.

103. In a broader perspective, several priority activities should be financed including institutional and capacity building, integrated water resources planning and management. Particularly, local support should be provided for sustainable solutions to communities,

associations, local authorities and emerging local private sector.

104. Finally, financial resources can be best attracted to the sector when efforts are made to increase financial accountability and to reduce cost in particular. For this, specific actions could include restructuring of existing institutions, improving existing management through demand management/leak reduction, promoting competition in service provision, data collection and creating financial incentives, participation as well as the use of low cost technologies

## ANNEX 4

Participation and Institutions for Integrated Water Resources Management

Report of working group 4

## I. INTRODUCTION

105. Water is not only a social and economic good but also an environmental resource. To consider water resources as a "common heritage" carries for some countries a too restrictive connotation. In its broad meaning, the water sector encompasses all activities related to integrated water resources management (IWRM) and to the development, distribution and utilisation of the resource (water supply and sanitation, agriculture, environment and ecosystems, hydropower, industry and other uses). The main difficulties faced in the formulation and implementation of IWRM policies and programmes are not due to lack of technical solutions but rather to the deficiency of institutional organisation and to insufficient legislation and/or enforcement of water acts and regulations. Institutional and legal frameworks are key elements of IWRM. Equally, the involvement of users and stakeholders is required if empowerment and ownership of the process is to ensure sustainability of IWRM and water resources development.

106. In most developing countries, institutions are viewed as too weak or too young to adequately carry out IWRM and need therefore to be strengthened. IWRM has a cost that needs to be carefully evaluated and covered. External Support Agencies (ESA) are urged to consider parallel financing of the creation/strengthening of IWRM institutions, as an integral part of water resources development projects.

107. In the following, all recommended actions are meant to complement or extend the recommendations of Chapter 18 of Agenda 21.

## II. AREAS OF PARTICIPATORY APPROACH FOR IMPROVING IWRM

108. The objective is to best manage the resource in an integrated fashion for the benefit of the users. Water policy and programmes should be co-ordinated with the overall economic planning of the country, particularly in the areas of agriculture and food security.

109. The focus areas for IWRM are as follows :

(a) Water resources assessments including monitoring, quality control and water-related environmental concerns, with special attention to the over-exploitation of aquifers;

(b) Socio-economic assessments including census data, patterns of water use and

consumption, future needs, traditional customs, willingness to participate;

(c) Water resources planning within natural management units and at national and regional levels, reconciling the supply and the demand as they emerge from the assessments and effectively involving the key actors in preparing, revising and adopting documents which need be updated on a regular basis ; particular attention should be given to large infrastructure developments (such as dams and inter basin transfers);

(d) Implementation of the action plans with full involvement of the key actors;

(e) Day-to-day water resources management : adjustments of the plans with regard to the changing conditions of the water availability and needs. Specific attention should be given to extreme events (floods and droughts, including their long-term aspects) which need full engagement of the users and of the community at large to implement contingency plans and to the operation and maintenance of infrastructure;

(f) Water resources protection and conservation, with specific emphasis on improving water quality, environmental health conditions and sanitation (urban and rural areas), institutional and legal linkages within an ecosystem approach. Particular attention should be devoted to the spread of water-related diseases and of aquatic weeds in large water bodies;

(g) Mechanisms for prevention and resolution of water-related conflicts at local and national levels.

## III. KEY ACTORS AND FULFILMENT OF THEIR ROLE

110. An institutional framework includes a system of laws and regulations, economic and financial instruments and a clear definition of mandates and responsibilities among the various actors. This institutional framework must guarantee the involvement of all partners in the definition and in the implementation of national policies and strategies for IWRM at different levels (local, regional and national).

111. In keeping with Chapter 18 of Agenda 21, the following actors need to play a key role in the formulation and implementation of IWRM policies, strategies and action plans:

(a) Decision-makers;

(b) International organisations and External Support Agencies;

(c) Industrial water users;

(d) Scientific and research institutes;

(e) Water services providers, including private entrepreneurs, for drinking water supply and sanitation , irrigation and drainage, hydropower and other water uses;

(f) Water and water-related departments of the state;

(g) Municipalities and local authorities (elected and representing the states);

(h) Users and user groups;

(i) Professional organisations;

(k) National and international NGOs.

112. Specific recommendations for the involvement of key actors.

(a) IWRM should integrate the interests of all users and stakeholders on a local, regional, national and international level in relation to water quality and quantity;

(b) National plans for IWRM should be developed in a constructive dialogue with users and stakeholders at the level of the management unit. They should make clear their interests and their role in the short, medium and long terms. This dialogue should include an assessment of the consequences of priority setting;

(c) There should be a clear distinction between the various stages of policy development and execution and the level of planning (local, sub-national, national and regional). The role and responsibility of the various actors should be clearly defined to avoid misunderstanding, but could change over time. The decision-making process should be at the appropriate lowest level taking into account these interests;

(d) Women should have an equal role in all management with regard to water resources, at the local, national and international level.

## IV. IMPROVEMENT OF THE INSTITUTIONAL AND PARTICIPATORY FRAMEWORK FOR INTAGRATED WATER RESOURCES MANAGEMENT

113. IWRM should integrate and reconcile interests regarding water quantity, quality and aquatic ecosystems of all actors. Community involvement is a key element in this process. The planning and implementation budgets must include all costs, infrastructure, management and operation and maintenance.

114. The following specific actions were identified to address these goals.

(a) Establish or update national policy and strategies for the entire water sector that are integrated with overall socio-economic development (including the co-ordinating mechanisms). The elaboration of policy, strategies and legal instruments should be a concerted process. A clear distinction has to be made for the implementation of IWRM between policy and standard settings, regulatory control/enforcement and the provision of services. An iterative planning process as a « bottom-up and top-down » dialogue is to be encouraged;

(b) Prepare, validate and adopt legislative and regulatory measures (including water administration, provision of services, standards for equipment, water quality and uses);

(c) Encourage countries to promote the use of economic and financial instruments, including appropriate incentives to improve water demand management;

(d) Promote the effective application of the "polluter-pays principle" and of the users-pay approach to generate revenues and regulate resource use with a view to an equitable allocation and redistribution of water benefits and charges, with special attention for low-income population groups;

(e) Ensure a clear operational framework at local, national and regional for the implementation of the action plans which should be well understood and accepted and include:

- the role of the state and public/private operators, including basin organisations and sectoral operators;
- the level and role of stakeholders in the management of basin institutions in a multidisciplinary mode;
- the partnership mechanisms that ensure smooth financing, implementation and maintenance of all water supply systems.

(f) Involve users and operators in the choice of the technological options and in the determination of services to be provided, taking into account existing local technologies and economic considerations.

(g) Promote the development of comprehensive water information systems that include water resources and socio-economic data bases;

(h) As part of capacity-building efforts, provide support to general education focusing on youth, as important advocates for information dissemination and attitude changes, and exchange of information, using as much as possible modern media and Internet;

(i) Strengthen the capacity building of decentralised agencies and community-based

organisations for IWRM, particularly for water conservation and resource protection and promote the creation of an enabling environment for the participation of the providers of commercially-based services, taking into account national conditions and the type of services needed;

(j) Prepare water codes and other regulatory measures together with enforcement mechanisms;

(k) Formulation and implementation of specific educational, participatory, regulatory, economic and financial measures for the control of non-point sources of pollution;

(l) Consider the impacts of upstream decisions on downstream environments, especially on estuaries and coastal zones, taking into account other water-related intergovernmental conventions.

(m) The international community, including donor organizations, need to play an important catalytic role in support of national efforts towards the formulation and implementation of national plans, capacity building, technology transfer, and in the provision of technical cooperation, taking into consideration local and regional experiences.

## V. SUMMARY OF KEY RECOMMENDATIONS

115. IWRM should integrate the interests of all users and stakeholders on a local, regional, national and international level in relation to water quality and quantity and ensure effective community involvement at all levels and at all stages of the process. A clear operational framework at local, national and regional levels for the implementation of the action plans which should be well understood and accepted and should include:

(a) The role of the state and public/private operators, including basin organisations and sectoral operators;

(b) The level and role of stakeholders in the management of basin institutions in a multidisciplinary mode;

(c) The partnership mechanisms that ensure smooth financing, implementation and maintenance of all water supply systems;

(d) National plans for IWRM should be developed in a constructive dialogue with users and stakeholders at the level of the management unit. They should make clear their interests and their role in the short, medium and long terms. IWRM must consider specifically non-point source pollution and the impacts of upstream decisions on downstream environments, especially on estuaries and coastal zones, and should take into account

other water-related intergovernmental conventions;

(e) A clear distinction between the various stages of policy development and execution and the level of planning (local, sub-national, national and regional). Establishment/update of national policy and strategies for the entire water sector that are integrated with overall socio-economic development (including essential co-ordinating mechanisms);

(f) The elaboration of policy, strategies and legal instruments should be a concerted process but a clear distinction has to be made for the implementation of IWRM between policy and standard settings, regulatory control/enforcement and the provision of services; encourage an iterative planning process as a « bottom-up and top-down » dialogue;

(g) The preparation, validation and adoption of legislative, regulatory and enforcement measures (including water administration, provision of service, standards for equipment, water quality and uses);

(h) The promotion the use of economic and financial instruments, including appropriate incentives to improve water demand management; effective application of the « polluter-pays » principle and users-pay systems to generate revenues and regulate resource use; equitable allocation and redistribution of water benefits and charges, with special attention for low-income population groups;

(i) The necessary capacity-building and information management *sensu lato* ; general education focusing on youth, as important advocates for information dissemination and attitude changes;

(j) The exchange of information using as much as possible modern media and Internet;

(k) The promotion of comprehensive water information systems that include water resources and socio-economic data bases;

(l) The capacity building of decentralised agencies and community-based organisations for IWRM, particularly for water conservation and resource protection;

(m) The role of women that should be equal in all management with regard to water resources, at local, national and international levels;

(n) The international support to the overall and efficient financing of IWRM costs. External Support Agencies and United Nations agencies could play a catalytic role in national plan preparation and implementation, capacity building, technology transfer and technical assistance, capitalising on local and regional experiences;

(o) The development of mechanisms to encourage riparian states to co-operate among each

other on matters related to the management of transboundary water resources (including groundwater), building on existing agreement principles, arrangements, instruments and programmes of action, taking into account interests of the concerned states.